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DESCRIPTION

OF

KOOTENAY DISTRICT.

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BRITISH COLUMBIA, VICTORIA,
7th February, 1884.

SIR,—I beg to submit a Report on the district of Kootenay from explorations undertaken by your instructions during the past season.

I have the honour to be,
Sir,
Your obedient servant,
GILBERT MALCOLM SPROAT.

To the Honourable John Robson,
Minister of Agriculture.

DESCRIPTION OF

KOOTENAY DISTRICT,

BRITISH COLUMBIA.

SURFACE.

The surface of the district of Kootenay differs in some respects from that of the mainland of our province lying west of the Columbia River. There is not a wide plateau between the mountain systems of Kootenay, namely the Rockies and the Selkirks, as there is between the mountain systems of Yale District. About the top of the Big Bend the Rockies and the Selkirks almost inosculate, but as the trend of the Rockies is south-easterly while the Selkirks have a general north and south direction, with less of the character of a range, the two systems become somewhat detached, and leave between them to the southward, a country comparatively lower but not of the nature of a plateau.

The Rockies run along the eastern side of the Kootenay District, but the eastern boundary has not been exactly determined. They are composed of several ranges, differing in height and appearance and running transversely in parts, but generally lying close together with a parallelism north-west and south-east. It is the Selkirks that give character to the district of Kootenay. They are less entitled than the Rockies to the appellation of a range, except from the top of the Bend to the head of Upper Arrow Lake, which area sheds water pretty regularly east and west. Nor are the Selkirks a broad mass filling the whole region with Alpine elevations. Their greatest elevation, or at any rate the largest collection of lofty mountains in the whole Selkirk system, is in the above-mentioned area towards the northern part of the Bend. Many fine snow peaks exist there. Going southerly there is a wide depression with southerly flowing streams. In the lowest parts of this depression lie the Upper Kootenay Lake and the great Flatbow or Kootenay Lake. This depression has rather a high eastern rim, diminishing southerly, which forces the Columbia River to a northerly, and the Kootenay River to a southerly, course. On the western side of this depression, particularly between the great Kootenay Lake and Slocan Lake or the Columbia River, the mountains form a broad mass rising in parts high with some snow peaks, and shedding water in all directions. What is called the "Purcell Range" on the provincial map, is not known by that name in the district. It seems to me part of the system of the Selkirks, not to be orographically separated from them, though thinned in its attachment to their mass for a considerable distance by the depression containing the lakes above-mentioned.

The western leg of the Columbia and the Arrow Lakes form the natural western boundary of Kootenay District, though the legal and administrative western boundary is an undefined line ten miles west from them.

The configuration of Kootenay District, thus, is an isosceles triangle with its base on the 49th parallel (United States boundary) and its summit at the head of the Big Bend, or, more familiarly, it may be likened to a pointed horseshoe enclosing a smaller one—the latter rimming the central Flatbow Lake depression above-mentioned.

The heights visible from the valleys and great waterways of Kootenay District are less than the traveller expects from the general mountainous character of the surface. The snow peaks, as a rule, are hidden behind hills except in the northern parts of the Bend. Some of these peaks probably reach a height of 7,000 to 10,000 feet, but the hills that commonly meet the eye are from 1,000 to 2,500 feet above the surface.

All the way up the Columbia River from the boundary through Arrow Lakes to above Eagle Pass the hills have an easy slope, and their average height is not over 2,000 feet above the surface—the valley itself being about from 1,400 to 1,500 feet above the sea. The same, except that they have a sharper slope, may be said of the hills that border the Lower Kootenay in its course into the great Flatbow or Kootenay Lake, and I think also of the foot-hills around that lake itself, but I could not get a good view of Kootenay Lake at any time owing to the thickness of the smoke which for several months this year covered the country from Puget Sound to the Rocky Mountains.

In the view north from Upper Kootenay Lake, low rolling hills are the principal feature. So are they in travelling along the eastern valley of the district from Tobacco Plains at the United States boundary up the Kootenay River and along the upper waters of the Columbia River to beyond Kicking Horse Pass, except in parts where a stern rocky face comes high in view or appears through gaps.

That valley is one of the most remarkable topographical features in North America. It is deep sunk and runs in a nearly straight N. W. and S. E. course for more than 400 miles, edging for the most part the foot-hills of the Rockies. To the north-west it is occupied by the river Fraser and to the south-east by the Canoe River to Boat Encampment and thence, within the district of Kootenay, by the Upper Columbia and Kootenay Rivers. The valley stretches beyond the international boundary line. The portion of this singular valley or wide trough that is within Kootenay District may be regarded as Kootenay proper. It has mining, arable, and grazing areas. The valley of the western leg of the Columbia with its woods of commercial value and the secluded Flatbow or Kootenay Lake region with its promising silver mines and periodically submerged fertile lands, are adjunctive areas to Kootenay proper above-mentioned.

On the eastern side of this valley (Kootenay proper) the foot-hills of the Rockies do not rise above the surface more than 2,000 feet along the Upper Columbia River, but they are higher to the southward along the Kootenay River. Contrariwise on the west side of the valley, the bordering Selkirk foot-hills along the Upper Columbia are higher than the opposite foot-hills of the Rockies, but the Selkirk foot-hills, like the main mass of the Selkirks, lessen in height to the southward, permitting a gentle ascent from the Kootenay River through Joseph's Prairie, over an indistinctive summit to Mooyie Lake, and a comparatively low surface thence over to the Lower Kootenay flowing north in its reversed course.

The whole surface of the district is mountainous or hilly, without any extensive plains, level uplands or undulating plateaus.

Most of the snow peaks are sharp, regular cones, though some have flattish summits with broad shoulders. Some stand out like great square castles, while others resemble gigantic chimneys. I noticed several interesting lofty mountains with shattered rocky tops—muscle-testers for the Alpine club of young Canada. Bare, high serrated sections are not uncommon in the peeps one gets of the main Rocky range.

The hills are of all shapes, with pleasing diversities of form as if to satisfy the eye. Their outline generally is soft, and vegetation, such as it is, covers them. I have seen more sternness and wildness in a ten days' excursion in the Scotch Highlands than during my whole visit to Kootenay. A long regular succession of low, shapely, uniform, linked hills with blind ravines between them, and now and then, a lateral glen running along a saddle-back, is most noteworthy in the foot-hills of the Rockies on the Upper Columbia, and also on the Lower Kootenay above the great lake, particularly on the west side of the valley of the latter.

The Selkirk foot-hills on the west side of the Upper Columbia are massier and less uniform than on the opposite side, opening the views oftener to the bulky mountains behind.

From the boundary up to the Arrow Lakes, the low foot-hills have no noticeable feature. The Arrow Lakes' hills have very varied forms. Though having, as a rule, little low ground between them and the water, they slope gently back, more so on the upper than on the lower lake. They are cut by passes more or less wide. Gable-roof spurs often come down to the lake,

like the ends of houses to the street of an old Orkney town, showing pretty, regular cones from points of view that hide the elongation.

I will describe the great river valleys in another place. The valleys of the mountain streams, as a rule, are narrow, many of them being gorges. Their beds often are V-shaped for long distances, and their expansions ended by bluffs projecting into the stream. A common feature is a cañon or rocky obstruction near their mouths, above which there are long stretches of canoe navigation, almost invariably, however, ended by falls or rapids that make portages necessary. Overflowed bottom lands yielding coarse wild hay are not unfrequent in the valleys of these streams. Small dry prairies occur in some of them. Through the country near the railway line, great cracks or fissures in the mountains are here and there seen. Eagle Pass (partly in Yale and partly in Kootenay District) is one of these, and the expectancy that this crack stretched eastward thence through the Selkirks, beyond the region explored by Mr. Moberly, C.E., in 1865, enabled Major Rogers to find the pass or depression for the railway route, with which his name will be associated.

The lakes in general are the familiar British Columbian mountain lakes, running north and south, and very long in proportion to their width, closely bordered by steep hillsides, with scanty soil, and with swamp grass patches at the mouths of the larger streams that enter them.

The above-mentioned northerly and southerly trend of the Rockies, and the general though irregular parallelism of the Selkirks give necessarily a corresponding character and course to the valleys and rivers. The surface is corrugated, pressed together like the narrower part of a fan. Instead of opening westerly towards the sea, the valleys are shut off by several mountain ranges. The open part of the Kootenay horseshoe is to the south, where, as above said, the great axial ranges separate somewhat. The natural facilities of intercourse are therefore greater in a north and south direction than from east to west. It was a full knowledge of the almost insurmountable barriers to traffic presented by the north and south ranges of this north-western region of America that caused Great Britain to insist so earnestly, during the negociations ended by the Oregon Treaty of 1846, upon extending her territorial rights south so as to share at least in the benefits of the Columbia waterway—the single channel through which the waters of the whole interior, for a length of 800 miles north and south, find an outlet to the ocean. The Canadian Pacific railway, cutting across the vast ribs of our land, redresses the practical failure of British diplomacy in 1846, and corrects nature.

I was surprised to find so many passes in Kootenay. Yale District may be entered at Osoyoos, but elsewhere (the Skagit valley being unavailable) everything for Yale District has had to go round the overhanging bluff at Yale, where the gorge grudges a twelve-foot road. Kootenay, though mountainous, is a country of passes. It is approached by passes, valleys or waterways from almost every direction, and there are many passes, also, through its interior ranges.

From the west you can strike its chief waterway in a navigable part, from Shuswap Lake either *via* Seymour, by a high trail, or through the easy Eagle Pass, and from Okanagan by the valleys of the Nacht-ee oos or the Whatch-shan streams. Three large watercourses open the southern frontier. The Rocky Mountains on the east have half a dozen gateways. To the north, the large Canoe River valley leads whither you will.

Internally there is a low, rugged cut from the western arm of Kootenay Lake to the Columbia River—the scene of the much discussed local railway. Passes lead from the Upper Arrow Lake along the Nacille-why-eet and Koos-koon-axe to Trout Lake, which also may be easily reached from the north-eastern arm of Upper Arrow Lake. Many a miner has gone from Trout Lake down the Lardo into Kootenay Lake.

You can go up Beaver Creek (on left bank of the Columbia above Fort Shepherd) and strike the headwaters of the well known Forty-nine Creek which flows north into the left bank of the Lower Kootenay.

The so-called "Purcell Range" is pierced by the Goat River and Mooyie valleys, and by an Indian trail from Kootenay Lake to the headwaters of St. Mary's River. There are trails also from the north end of Kootenay Lake or from the neighbourhood of Upper Kootenay Lake, which lead over high divides to the Upper Kootenay and Upper Columbia Rivers. The supposed snow-peak region to the north has disclosed a route for the railway across the Selkirks.

Some of these lines of internal communication, it is true, are Indian or, at the best, pack, trails; still the above shows that the country is not the impenetrable region, naturally, which many have supposed it to be. With the exception of Vancouver Island, Kootenay is in fact, naturally, the most accessible region in the province. But we have been fumbling about and have not put the key into the lock. In trying, in past times, to reach and open Kootenay, we

made a costly, wild, high trail along the frontier, which, when made, was open for so short a season, that it was of little use, and owing to its uselessness, we spent nothing more on it, and practically abandoned Kootenay. This was because the Government of that time had no intelligent appreciation of the surface of the whole district. Exploration, considered broadly, is another word for economy; it enables us, for one thing, namely, in opening a district, to use the pathways provided by nature, and to know where effort can be best spent in removing natural obstructions.

The mother lakes of the Columbia are the real centre of the whole district of Kootenay. You can go north and south from them by open natural ways into and through a far larger mining, arable and grazing area than from any other point. A pack-trail, if not a waggon road, should have been made 20 years ago from Shuswap Lake through Eagle Pass and across the Selkirks to the Upper Columbia. Such a trail or road would have served the western leg of the Columbia region and the whole eastern valley including Wild Horse Creek camp, too. It would have been open 5 or 6 months in the year; it would have been 1,500 feet lower and have cost about one-third of the Fort Shepherd trail. During the past year the railway company have made a portion of this trail, and, had time permitted, I could have ridden across the Bend from the Columbia to the Columbia. How is it that we have lost for 20 years the use of a district of considerable resources? The answer probably is, first, that it was not explored; secondly, the Government had not the Indian guidance in the matter which they have been accustomed to follow in road making. The Indians, both east and west have known the possibility of access by what is known as Rogers Pass, probably for centuries, but neither Shuswap nor Kootenay would shew it or traverse it, as traditionally they were bitter enemies.

WATER-WAYS.

(1.) The Columbia.

All the water-ways of the district need not be stated, as they appear on the map. Few mountainous countries are so well supplied with navigable waters.

A bit of History.

A word or two, first, about the Columbia River, our greatest, best known river, and the grandest in America west of the Rockies. This river, as is well known, takes its name from the Boston Ship "Columbia," Captain Gray, who, in 1792, entered its mouth. From this vessel therefore our province derives its name. The river was called the "St. Roe" by the old Spanish navigators, who appear to have had some knowledge of its estuary or lower course. Its northern branch, now the British portion of the river and known to the world as the main headwater stream, was discovered in 1811 by Mr. Thompson, the Astronomer of the North-West Company. He called it the "McGillivray River," which was the name of a director of the Company. Following its course till joined by the more southerly tributaries discovered by Lewis and Clark in 1805, this gentleman continued his journey to the Pacific, and, thus, was the first civilized person who navigated what has proved to be the whole main Columbia River.

Size of the Columbia in our territory.

The total length of the Columbia River within British Columbia, including its lakes, is about 440 miles. More than a third of it is composed of lakes, or expansions of a lake-like character. The mother lakes are pretty lakelets, not a dozen miles long and less than two wide. They are believed to be deep. The river issuing from the lower lakelet, is about 150 feet in width with a two mile low-water current, diminishing to a mile and a half current, for a considerable way down. The volume of course gradually increases, giving an average low-water width down towards the Boat Encampment of 250 to 350 feet, now narrowed by cañons, now spreading into wider expanses, with a current correspondingly rapid or slow. The large tributaries from Boat Encampment to Arrow Lake cause a marked increase of volume, with greater swiftness in the shallows and narrows. The river at Jordan Creek, six or eight miles below Boat Encampment (51° 49′ 18″ N. L.—Leech; Orr's Exploration) is about $\frac{3}{4}$ of a mile wide at high-water. It broadens somewhat above Death Rapids. Naturally the flats in the great river bed are higher as the river is descended, and trees, chiefly cedar, grow more plenti-

fully on them than on the half-submerged flats of many portions of the Upper Columbia river-bed, on which the vegetation is more aquatic—swamp grasses, cottonwood, willows, &c., with some of the moist-loving white spruce. As the river approaches the Arrow Lake, it runs tortuously among timbered flats in a river-bed of about a mile wide. Current at low-water probably averages 4 to 5 miles. Outside of the lakes I saw no grand calm reaches on the Columbia, such as occur on the Lower Kootenay between Kootenay Lake and Bonner's Ferry, but the whole river, even near its headwaters, has a certain nobleness of expression about it.

The Arrow Lakes are believed to be very deep—sixty fathoms have not reached the bottom,—but they become shallower towards the ends. The current is almost slack water; drift floats gently through them. The Upper Arrow Lake has a north-east 7-mile arm. Not counting that, the lake is about 40 miles long, with a width of 3 to 3¼ miles. The average width of the river, or strait, between the Upper and Lower Arrow Lakes is about 800 feet, but there are small expansions; the average current 2 to 2½ miles. The Lower Arrow Lake is, on an average, narrower than the Upper Arrow Lake by about a mile. Its length is indeterminate; there is almost slack water until the mouth of the Kootenay River, a distance of 75 miles, is approached. Thence to the boundary, the low-water width of the river varies from 300 to 500 feet; high-water width about double; current from 3 to 7 miles. The river twists much without making great bends; one seldom sees more than half a mile ahead. The above are "estimation" distances, judged by the eye during a rapid reconnoissance. At Colville in United States territory, 42 miles by water south of the boundary, the Columbia has been ascertained by actual measurement to be 1,250 feet wide from bank to bank at high-water.

The River Bed and the Depth of the river.

Speaking generally, the bed of the Columbia River from the mother-lakes to the Upper Arrow Lake may be described as sandy, with a considerable mixture of gravel in many places, and stretches in which the bed-rock is exposed, or the gravel much overlaid with boulders. From the mouth of the Kootenay to the boundary, the sandy bed and the sides are covered, remarkably, with cobble stones, which have the appearance of a rude pavement. My visit was at low-water. The average low-water depth of the Upper Columbia, for about 100 miles down, is about 1½ to 2 feet, but there are shallows at low-water over which only light boats can be pushed. The river is very low about the 1st of April. By the 1st of May, commonly, there is a rise of about 2 feet in the Upper Columbia which increases according to the season, but with a maximum of, say, another couple of feet up to the middle of September. Lower down, the average depth and the rise are greater, very markedly so, of course in lake-like expansions, in bits between approaching rocky mountain sides, or at cañons. The average low-water depth from the Little Dalles to the Upper Arrow Lake is 4 to 5 feet. Between the mouth of the Kootenay and the boundary, it is from 6 to 10 feet, frequently shallowing. Judging roughly by the eye, I should estimate the ordinary rise of the water at about 4 to 5 feet on the Upper Columbia, and about 10 feet below the Boat Encampment. Old drift on the Arrow Lakes, and elsewhere, however, shows a rise of 20 feet. This took place, as far as I could learn from the Indians, about 1865. Immense snow-slides which swept acres of ponderous timber from the flanks of the Selkirks, as a razor would take off a two days' beard, occurred at the same time. The June floods are the heaviest. The local rise at cañons and narrow places is of course very great at that time—sometimes 50 to 60 feet.

Islands in the river.

In the Arrow and mother lakes there are no islands, and few high-water islands in the river. I remember a small wooded high-water island—a cobble heap mixed with sand and gravel—immediately below the mouth of Kootenay River, and a nother of the same kind about 12 miles down. There are some islands, but not noteworthy ones, in expansions of the Upper Columbia.

NAVIGABLENESS OF THE COLUMBIA.

The Columbia River, within British territory, except when closed by ice, is navigable for long distances by suitable steamboats. The longest stretch is from the United States boundary up to Death Rapids, a distance of about 229 miles, divisible as follows:—

	Miles.
The distance by the Columbia River from the boundary to the mouth of the Kootenay River, is about	31
Thence to north end of Lower Arrow Lake	75
Thence through the river to south end of Upper Arrow Lake	17
Thence to north end of Upper Arrow Lake (not including Nin-com-ap a-lux, its north-easterly arm, which is about 7 miles)	40
Thence to Eagle Pass	29
Approximate distance by river from the boundary to Eagle Pass	192
(Do. mouth of Kootenay River to Eagle Pass 161 miles.)	
Eagle Pass to Death Rapids, about	37
Total mileage of navigation on the Columbia River from the boundary to Death Rapids	229

It is perhaps not absolutely impossible to take a steamboat through Death Rapids. In the opinion of some, a steamboat intended for service on up-river stretches, might be taken through these rapids at a suitable season by an expert captain who watched chances, but their navigation by steamboats, in the ordinary sense of the word, is impossible.

Of the above 229 miles, about 115 miles are slack water, chiefly in the Arrow Lakes. The current of the remainder is rather strong, not unlike, in many places, that between Yale and Hope on the Fraser. The Indians in canoes do not try to breast the current; they keep along the bank taking advantage of eddies, and they often use poles or ropes. Steamboats for this river should be powerful stern-wheel boats, and they would require liberal permission in the use of steam. Screw propellers would be useful on the Arrow Lakes only. The rapids of the Columbia called the "Kootenay Rapids," from their occurring in the Columbia immediately above the mouth of the Kootenay River, are troublesome owing to the crookedness of the channel. In the event of trade springing up, three or four big boulders in these rapids should be removed.

The "Little Dalles," by which I mean the British "Little Dalles," two miles above Eagle Pass (there is another "Little Dalles" in United States territory 17 miles south of the boundary, and a third of the same name below Celilo and above the Great Dalles), are not always navigable for steamboats. During the June floods a steamboat might have to wait a few days at the Little Dalles for a chance to go through these rapids. They could be improved by blasting.

There might be a railway portage link at Death Rapids if traffic on the upper river justified its construction. From Death Rapids to Boat Encampment there is a navigable stretch of about 20 miles. Thence to the foot of the riverine expansion usually called Kinbasket Lake, say about 25 miles, the Columbia River could be made navigable only by costly improvements. That lake is about 9 miles long, and, through it, and for about 25 miles farther, there is good navigation. The next 25 miles up to about the proposed railway crossing is not good. The river thence to the mother lakes, a distance of about 110 miles is navigable. There are not many rocks in this latter stretch, but, as in the river Willamette in Oregon, low-water islets, gravel bars, and shoots are found. The salmon spawning beds somewhat obstruct the entrance to the lower of the two mother lakes at low-water, and the bit of river between these two lakes may need some improvement, but not much.

The navigable stretches above-mentioned are suitable for river steamboats, except when closed by ice, or when the water is at a very low stage in an exceptional season. Canoes and boats, by portaging occasionally, may at some risk be taken all the way from the boundary to the head-waters.

The boulders in the shipway of the Columbia in British territory are in general more or less rounded, though there are notable exceptions, for instance the perilous hidden pinnacles in the lowest of the three riffles at Death Rapids. As a rule, therefore, boats touching them will not suffer so much as in some other rivers, for instance in the great Snake River tributary of the Columbia, where the jagged edges of the basaltic boulders rip steamboats.

VALUE OF THESE NAVIGABLE STRETCHES.

As regards the above navigable stretches on the Columbia, it may be said of the greatest of them, namely, the one from the boundary to Death Rapids, that it is valuable generally as

a water-way for internal, and also possibly for external traffic. It is a water-way that will be crossed by the Canadian Pacific Railway. The river traverses for a considerable distance a timbered section of the country. There may be gold on the banks or in some of the tributaries.

The second stretch of navigation above-mentioned, namely, from Death Rapids to Boat Encampment, might become valuable if mining and logging industries grew there, but a short portage railway link of 2 or 3 miles (I have not seen the place) would be required to connect with the first above-mentioned stretch of navigation.

The short bit of navigable water through and above Kinbasket Lake may yet be useful to the miner.

Much more important, and needing provision immediately, is the navigable stretch of about 110 miles from the Kicking Horse railway station into the mother lakes of the Columbia. This leads directly from the railway to grazing and farming areas and towards established mines—being in fact a natural water-way into that portion of the district which I have called Kootenay Proper, namely, the Eastern Valley.

NAVIGABLENESS OF KOOTENAY RIVER AND LAKE.

The Kootenay River is navigable at certain seasons by light stern-wheel steamboats for nearly 100 miles between Tobacco Plains at the United States boundary and the junction of the river with Findlay Creek, which comes in from the west near the mother lakes of the Columbia, but this navigation is somewhat impeded in parts by drifts and shallows.

A flat-bottomed skiff, 16 feet long and drawing 8 inches, was taken in October, 1882, from the Ferry (Galbraith's) down the Kootenay through United States territory to Bonner's Ferry. The time occupied was 12 days. There was no portage in British territory, but the water was swift and very shallow in several places. In American territory portages were necessary during two days,—at the falls (some 70 miles before reaching Bonner's Ferry), and at other places where boulders filled the river bed.

From Bonner's Ferry 60 miles down the Kootenay River to the British boundary, and thence farther down the river 33 miles to Kootenay Lake, the navigation is good for any sized vessel. The river winds much. It is 500 to 600 feet wide, 30 to 60 feet deep, with few snags and a gentle current. The low soft banks are favourable for steamboat landings almost everywhere.

Kootenay Lake in its whole length of about 90 miles, with its western arm of 20 miles, is deep and clear of rocks.

The lower course of Kootenay River, namely, from the outlet of Kootenay Lake to the Columbia River, a distance of about 20 miles, is not navigable for steamboats, owing to falls and rapids. Light boats and birch-bark canoes can be used on it; but from five to seven portages have to be made, according to the stage of the water.

The east branch of the Lardo, which joins the west branch and flows into the north end of Kootenay Lake, may be found to be navigable for steamboats from Kootenay Lake into Upper Kootenay Lake. The principal obstacles are a shallow rapid near the mouth of the stream and jams in its bed.

Upper Kootenay Lake, which is about 20 miles long, is navigable, and it is said that a long stream coming into it from a north-easterly direction also could be made navigable, but I had not time to examine this portion of the country. It is important to find means of bringing the Upper Columbia (and consequently the Canadian Pacific Railway) and Kootenay Lake as near as possible by steamboat navigation in this direction. Some persons affirm that the above water-ways approach a short low pass over to the Columbia in its head-water stretch. Others say that the mountains immediately on the west side of the Upper Columbia are continuously high and do not present an available pass even if the above water-ways in their direction could be navigated.

My impression is that Upper Kootenay Lake and the head-waters of the Columbia River are shewn too near one another on the existing provincial map.

Mr. Perry, who lately explored the Spallumcheen River, suggests that on the above map the Upper Arrow Lake, or a portion of it, is shewn too far west.

Jordan Creek clearly is wrongly placed. Its latitude of 51° 49′ 18″ N. was determined by Mr. Leech, of Mr. Orr's exploration party, in 1865.

Many other inaccuracies exist which need not be recited, as Mr. Farwell will endeavour to amend some of them in his sketches.

Lake Slocan is entirely omitted. It is a considerable lake, 25 miles by 1½ miles, lying between Kootenay Lake and Lower Arrow Lake and discharges into the Kootenay River by the river Slocan, which is about 30 miles long.

Many of the tributaries of the Columbia are navigable, subject to portages, for considerable stretches in birch-bark canoes.

NAVIGABLENESS OF WATER-WAYS FROM KOOTENAY DISTRICT INTO THE UNITED STATES.

There are only two water-ways from Kootenay District into the United States that require mention, namely, the Kootenay at its second crossing of the boundary and the Columbia itself.

The southerly navigation of the Kootenay when it first crosses the boundary at Tobacco Plains is not sufficiently important to need a description, considering the nature of the channel and the course of the river in relation to possible traffic.

That from Kootenay Lake up Kootenay River 33 miles to the boundary and 60 miles beyond to about Bonner's Ferry in Idaho territory, has been mentioned above. This fine navigable stretch is the natural and only inlet and outlet for the traffic of Kootenay Lake district. The valley in which it lies is the open part of the horseshoe which that secluded district resembles in shape.

Bonner's Ferry is connected with Sand Point, a station of the Northern Pacific Railway on Lake Pend d'Oreille, by a tortuous but easy pack trail of about 50 miles. This runs through a pass across the watershed between the Kootenay and Pend d'Oreille Rivers, known to the Hudson's Bay Company as Pack River Pass. Pack River is a small stream which flows into Pend d'Oreille Lake. The low summit of the pass is about 17 miles from Sand Point, the descent to the Kootenay being in the valley of one of its tributaries called Deep Creek on American maps. The valley is 4 or 5 miles wide, soil chiefly a light sandy loam, fairly timbered. There is some open swamp grass land in parts.

The Idaho legislature has granted a charter for a toll waggon road from a point at or near Mud Slough, in the neighbourhood of Sand Point, to the left bank of Kootenay River not far from Bonner's Ferry. The following are the toll rates:—

Two horses, or oxen, and waggon	$2 50
Each additional span	1 00
Horseman	1 00
Pack animals	0 50
Loose animals	0 25
Sheep or hogs	0 10

It is said that the construction of this road will be begun next spring. The length of it may be about 37 miles. It is an easy pass for a railway, and the railway no doubt would be shorter than the waggon road.

ICE.

The ice on the various water-ways may be mentioned in speaking of their navigableness, though perhaps more properly the subject would come under the head of climate. They all are obstructed by ice in winter, except in the larger lakes and in portions of rivers and streams where the current is very swift. This ice varies in localities from one to two and a half feet thick, but the snow-ice on the top caused by frequent temporary thaws spoils ice travelling. The time of the first forming of the season ice varies in different localities—the range being from about the 10th November to the middle of December. The ice breaks in March, generally towards the beginning of that month, but in some years, and in particular localities, it lingers into April.

The mother lakes of the Columbia being small and narrow freeze over hard. They have 2 or 3 feet of ice, and it usually is the beginning of April before it disappears. The same may be said of the river from these lakes round the bend to Upper Arrow Lake, with local variations caused by the comparative stillness or swiftness of the current. Ice does not form, of course, in places where the current is very rapid.

The north-eastern arm of the Upper Arrow Lake, which arm is known as Nim-com-ap-a-lux, has ice, but the northern portion of Upper Arrow Lake, down to about Koos-koon-axe stream, is seldom or never frozen. Thence southerly through the river or strait between the Upper and Lower Arrow Lake and down the Lower Arrow Lake to about Hy-eek-an stream there is ice, but from Hy-eek-an stream southerly, an open space occurs until within about 12 miles of

the foot of Lower Arrow Lake. The ice again begins there and continues down to the mouth of Kootenay River. Thence, southerly, the rapidity of the current in most places prevents the river from being solidly covered; there are a fringe and patchwork of ice varying in solidity and appearance, and more or less connected, according to the season. Perhaps ice forms for about fifty feet from the shore; blocks of this break off and float down until stopped by stranding or running against other blocks, with which sometimes they connect.

The ice in the Lower Arrow Lake goes away in spring before the ice in Upper Arrow Lake. The water of the Columbia for a long distance below the Arrow Lakes shares the comparative warmth of the water of these deep reservoirs. The large tributary, the Pend d'Oreille River, comes also through large lakes and is warm. The effect of the lake-warmth is noticeable at Colville, 42 miles by river below the boundary. The river does not freeze there until about the new year. It freezes sooner lower down the Columbia, towards Wallula, &c., the water there being farther from the lakes and therefore colder.

The seasons vary so much in character that one cannot state when the Columbia opens, as a rule.

Perhaps, as a general indication, it may be said that a traveller might be ready at the boundary about the 1st April.

As regards ice on Kootenay Lake, that large sheet of water does not freeze over. Ice is only found in the comparatively shallow water at its ends or in small bays. The western arm freezes here and there solidly along the shores, but the first wind bursts it up.

The Kootenay River, between the Kootenay Lake and the United States boundary and southerly up to Bonner's Ferry in Idaho, is solidly frozen over every year with ice of about 2 feet in thickness, sometimes thinner. In 1882 ice began at the boundary on the 11th of November, but on one occasion it did not appear until after Christmas. I could not find when ice disappeared at the boundary in 1882. The ferry at Bonner's Ferry was in 1882-3 stopped by ice between the 20th December and the 20th March. In some seasons one can walk across the river after three or four days of ice. It generally holds throughout the winter, but there are many surface thaws.

It is unnecessary to mention the occurrence of ice in other waters in the district.

CLIMATE.

The climate of the whole district of Kootenay is healthful and less severe than its mountainous surface and surroundings would lead one to expect. On a broad general comparison, it more resembles that of the region from Clinton to Osoyoos than of any other region in the province. Yet there is much unlikeness in the comparison. The difference is caused mainly by the different surface of Kootenay which has not a wide plateau like that of Yale District, but is more mountainous and has, at least in its interior, narrower valleys that lie higher above the sea. On the other hand, Kootenay has greater water areas in its rivers and lakes, and is opener than Yale District to the south, whence warm air is indrawn. The three valleys opening to the south, and extending far into United States territory, namely, (1) the eastern valley lying along the Rocky Mountains, (2) the valley of the Kootenay leading to the central depression in which the Kootenay lakes lie, and (3) the valley of the Columbia, have an important influence on the general climate of the district, particularly as they all are large waterbeds and watercourses, and as two of them, the eastern and western valleys, meeting at Boat Encampment, really form a single valley that encircles two-thirds of the district—a conduit of warmth among the mountains.

The irregular surface of the country extending, as it does, over more than three degrees of north latitude, causes local variations of climate. It is not necessary to describe these, except in districts likely to be peopled. Unfortunately, no meteorological or even temperature observations have been made systematically in Kootenay. I have had to form my opinions as to the climate from the general statements of the few scattered residents, and from observing the vegetation in autumn—the time of my short visit.

Snow-Fall.

The most noticeable difference in the climatic subdivisions of the district would appear to be in the snow-fall, by which I mean the average depth lying on the ground. In the areas most influenced by warm winds that come in from the south, thaws occur and the whole of the fall does not lie and pack. The local causes of greater or less snow-fall are difficult to trace, both in our district of Kootenay and in the United States immediately south of it. The snow-

fall in Pack River Pass between Lake Pend d'Oreille, Idaho, and the Kootenay River equals that two degrees to the north in British territory, on the Upper Columbia, which is 1,000 feet higher and touches the Rocky Mountains. But localities occur, not far from Lake Pend d'Oreille, where the snow-fall is less than a foot, and this diminution, again, also can be paralleled far to the north in our territory on the Upper Columbia.

The area of the heaviest snow-fall in Kootenay, with a *minimum* on low ground of four feet or thereabouts, is above a line drawn rather north of east from about the head of Upper Arrow Lake. The average farther down the Columbia, and also on the bottoms south of Kootenay Lake, is less than this by 18 inches or 2 feet. The area of smallest snow-fall, say with a *maximum* of about 2 feet, lessening to a foot, or under a foot, in certain localities, is in the eastern valley along the Rocky Mountains, for about 150 miles up from the United States boundary.

These may not prove to be accurate statements of the relative amounts of snow-fall when systematic observations are made as to the climate of the district. Ordinary observers do not distinguish between *snow-fall* and *snow-pack*. In the areas most influenced by warm winds that come in from the south, thaws occur, and the whole of the fall does not lie and pack.

Rain-Fall.

The whole district is characterised by the light rain-fall of the extensive comparatively dry country west of the Rocky Mountains both north and south of the United States boundary of which Kootenay is, naturally, a part. 1883 was a very dry year. I remember only a single wet day, and two or three showers, during my stay in Kootenay, from the 23rd July to the 2nd November. The weather, however, as a rule, breaks and becomes more or less rainy, or showery rather than rainy, over the whole country about the middle of October.

The eastern valley, from the boundary, far up towards the first railway crossing of the Columbia, has the light summer rain-fall of the Thompson valley, but probably a hygrometer would show more moisture in the atmosphere. The same may be said of the Kootenay bottoms south of Kootenay Lake, except that more clouds pass high overhead. There is more rain-fall on Kootenay Lake than on the bottoms, but not much.

The rain-fall on the Columbia from the boundary up to Arrow Lake also is light, though somewhat heavier than in the eastern valley above-mentioned. On the Upper Arrow Lake, judging by the vegetation, there is more rain-fall than in the Lower Arrow Lake. This increase is maintained northerly, but there is no locality, so far as I could learn, that has a wet summer. In the regions of comparatively heavy rain-fall, the augmentation is caused by heavier spring and fall rains, and more showers in summer.

The very moist appearance of many localities in Kootenay is not caused by excessive rain-fall, so much as by stream-floods, slow melting of snow-heaps in fissures, ravines or nooks, and by woods that obstruct sunlight and perpetuate dampness.

Dew Deposit.

There is a very copious dew deposit on the bottom lands of the Lower Kootenay, much greater than in the eastern valley of the district or in the valley of the Lower Columbia.

Temperature.

In the absence of systematic observations, it is difficult to do more than indicate the range of temperature, without attempting to state the mean, on which, during certain months, ripening depends. There was so much smoke this year in the important months of July and August that I could gaze at the sun every day without winking. But this is an unusual circumstance. The climate of Kootenay, varying of course with the irregular surface, may be described as a climate of extremes, as in the southern interior of our province generally. The summer heat, in the valleys, is great, probably ranging from 80° to over 100°, but the great bodies of water and occasional breezes, modify its effect in the larger valleys. The side valleys are more sultry. In winter the temperature varies much and suddenly, every season, and in different years, more particularly in the areas of the greatest influence of the south winds, which extends northward far up the valleys.

In the southern area generally, the mean winter temperature probably will be found to be somewhere about 15°, say nearer to that of Clinton than to that of Spence's Bridge. Occasionally, there are short intervals of very cold weather, changing surprisingly almost to mildness in a short time. Towards the north of the district, the climate has similar characteristics, with a lower temperature.

Seasons.

Of the seasons in different parts I have obtained the following accounts:—

Kootenay Bottoms.—Cold in winter—sometimes for a day or two 25 to 30 below zero, but frequent thaws, snow not dry, rather wettish. February the coldest month. Mornings always frosty until nearly the 1st May; occasional light night frosts until 10th to 20th May, which, however, do not hurt crops; very little rain, rain clouds high up seem to pass over; very heavy dews, particularly latter part of June and July and continuing up to the occurrence of frost; first frost, first week in September; weather in most years tends to become unsettled and rainy about middle of October, but some "falls" are dry and the beginning of winter late.

Eastern Valley.—The climate will be mentioned under that head; it is generally similar; less dew and less snow (about the Columbia Lakes); the summer somewhat more sultry.

On the Arrow Lakes and Columbia south of them the climate much resembles that of Kootenay Bottoms, but there is more rain on Upper Arrow Lake. North from about the head of that lake, the winter is characterised by deeper snow-fall, and is slightly longer than at Kootenay Bottoms.

LOWER KOOTENAY RIVER BOTTOM LANDS.

The Grohman Leased Lands.

Topographically, the Lower Kootenay bottom lands begin near Bonner's Ferry in United States territory, about 93 miles up the river from Kootenay Lake. The boundary crosses about 33 miles up the river, so that a large area of these lands is in the United States. The general character of the whole valley north and south of the line is the same; perhaps the bottom land on the American side is slightly higher, and the soil, in parts, a little more sandy, at least on the side-hills.

The valley seems to be the southern half of Kootenay Lake, made into land by the material brought down by the Kootenay River, which still continues its land-forming work, aided by the effect of the annual inundation of the whole bottom lands from the lake to Bonner's Ferry. Probably the elevation of the land is due jointly to deposits from the water and the gradually diminishing rise of the water at the period of overflow. There is evidence around the lake of a higher rise of water formerly. The partial denuding of the country of its forests by fires must have lessened the freshets in the Kootenay River and also the mountain downflow into Kootenay Lake.

The bottoms are hardening. The Indians formerly used side-hill trails to get to the lake. They now use trails that run along the bottoms.

The valley of the bottom lands is from 3 to 5 miles wide on an average between the side-hills, the British part near the lake being, I think, wider than the American portion, but the dense smoke prevented me from judging distances accurately.

Side-hills.

The side-hills of the valley are low, say from 1,000 to 2,000 feet above the surface. Those on the west side are more regularly formed and rise higher than on the east side. They are for the most part low hills or hilly ridges, running laterally to the valley and separated by glens, ravines, or gulches about half a mile apart on an average. Some of these hilly ridges are of saddle-back shape, others rounded; I did not see any that were sharply conical. The outline of the summits is soft and wavy, as seen from the valley. The smoke prevented my seeing the shape of the mountains behind. The slope of these bordering hills on the west side of the valley is steepish, with granitic rocks frequently exposed, soil scanty and very little grass—pine-grass. Scrubby larches (tamarac) and Douglas fir seem to prevail, growing more or less thinly up to the summits. These hills do not afford any important area either for agriculture or pasture. Their inferior character as hill pasture is a drawback to the possible value of the bottom lands when reclaimed.

The hills on the east side of the valley are, as above said, lower and less regular. They also have an easier slope and do not retire to high mountains. On the American side, the country across to the Mooyie has somewhat the character of a low rolling region, and there is a remarkable break or depression, averaging about 1,000 feet above the bottoms, through which the trail from a point 12 miles south of the boundary strikes the Mooyie valley and runs over the 3,000 feet summit above Mooyie Lake into the eastern valley.

Within our territory on the east side of the valley, the hills increase in height and show precipitous bluffs in parts, without however losing the general character of a rolling upland, until merged in the eastern flankers of Kootenay Lake.

I will speak in the sequel of the agricultural and grazing capabilities of these hills on the east side of the bottom land valley.

Down the valley thus formed and bordered, the river, which already has been described under the head of waterways, meanders into Kootenay Lake—a fine navigable stream with low soft banks. On each bank there is a belt of cottonwood from three to five chains in width, which of course crosses the view, with the windings of the river, as one looks up or down the valley. Scarcely a tree is visible between that riverine belt and the hills. The treeless, grassy surface reminded me of Matsqui or Sumass—large green areas of swamp grass surrounding russet intervals, showing the presence of rushes and goose-grass on the wetter portions. I expected to see lazy, fat cattle and the smoke of rich homesteads.

A nearer view and a tramp over the surface are somewhat disappointing. Much of the surface under the long green grass is soft and mucky in August, though one can slowly walk over it, at the cost of wet feet, without sinking or sticking. The tule areas of course are wetter, and often lumpy from the effects of the winter frosts. As a rule, near the river banks and the banks of large sloughs, the ground is higher and therefore drier, with some red-top grass in consequence, but not much blue-joint. The hard trail, which can be followed on horseback, is generally along such ground.

Judging by the eye, and by the lie of the half-drained surface water after the overflow, the ground in many parts is slightly lower towards the side-hills than near the banks of the river and of sloughs. This causes the edges to be wet, as there are many springs along the hill-sides, some almost level with the bottoms, others higher, which make little streams that flow into and spread over the low land across a narrow fringe of drier ground formed along the base of the hills by detrition.

The soil of these bottom lands is unquestionably fertile, but owing to the periodic inundation, agriculture is impossible except on little patches raised here and there above the ordinary overflow. Neither fields nor homesteads could be formed on the bottoms. The high water would kill cereals, timothy and the cultivated grasses.

In their present state the bottoms have certain winterage capabilities, if the grass is cut and stacked in time, but, being remote from good summerage, and the snow fall being deepish, with occasionally hard winters, it is not likely that anybody would buy the lands for the sake of such winterage as they afford. They may therefore be considered as unavailable property of the Government in their present condition. The engineering problems connected with the reclamation of these lands will be dealt with in Mr. Farwell's report; it seems to me, however, improbable that any capitalist will attempt to reclaim the British area, unless he has some control over the American area or some profitable arrangement respecting that area, as the work undertaken for the British area, if effective at all, would do more good to the American area, which, being farther up the river, already contains larger tracts of somewhat drier land as is shewn by the vegetation.

Complete reclamation of course would put a stop to the annual aqueous deposits which elevate and enrich the bottoms. It would tend to destroy the luxuriant moisture-loving vegetation. There would no longer be the moisture which causes that vegetation to exist and to thrive. The browsing would be destroyed which now gives the bottoms a certain limited winterage value by affording food and some degree of shelter for stock. Such grazing value as the east side hills now have would be reduced, as that has to be estimated in relation to the bottom lands.

On the other hand, every acre of these fertile lands, if completely reclaimed, would be at once applied for by the best class of settlers, as there is little doubt that all the cereals and the ordinary root crops and vegetables would grow well and ripen, if early sown or planted. Cultivated hay would be more nutritious, more uniform in quality and would cure better for baling and export than the wild hay.

Dairying might be an important industry on prepared pastures of choice grasses maturing at different periods so as to furnish fresh grass throughout the season. The only doubt one has as regards the effect of complete reclamation is whether it would not make irrigation necessary, having regard to the dry climate during most, if not during all, years, and considering the porosity and whiteness of the soil which seems to be much the same for a great depth without any apparently retentive subsoil. It would be a curious result, if taking the water off made it necessary to bring water on. This is a question which cannot be absolutely determined by any

forecast, or by small experiments. I found that water poured on the soil quickly disappeared, apparently as it would through sand; nevertheless, next morning, there was a puddle almost pasty, showing retentiveness. Perhaps after complete reclamation, the subterranean water percolating laterally would stand at the level of the water in the river and come up by capillary attraction to join the dew in nourishing plants on the surface. If irrigation should be necessary, the facilities for cheap irrigation are limited. There are not many large streams, though springs occur on the side-hills. The unevenness of the surface of the bottoms in many parts, or perhaps as the rule—too considerable for remedy by the plough—would be an obstacle to irrigation. It is proper to add that the general opinion among the few persons acquainted with the locality is that irrigation would not be necessary on the reclaimed lands. It is not necessary, they say, except in very dry years, on the side-hill land, 20 or 30 feet above the bottoms, but the soil there has more clay in it, and where not very sloping, perhaps retains better. It is a remarkable fact, suggesting many speculations for which there is no space here, that the dry almost dusty whitish soil east of the Cascades, where the average annual rain-fall hardly exceeds 20 inches, somehow does afford moisture for crops. The common explanation given is the copiousness of the dew-deposit, but this explanation is insufficient.

Without touching the engineering question, I may offer a few remarks on the hypothesis that only partial reclamation is possible, considering the lie of the surface, the downflow from the hills and so forth.

Partial reclamation might have certain advantages if the relative cost were not too great. It would especially benefit the lands south of the boundary, as they are, as above said, somewhat higher than those lower down the valley. Within the British territory the bottom lands on the east side of the river seem to be more deeply covered by the overflow than the lands on the west side of the river. Partial reclamation would open considerable tracts for agriculture, and permit areas of timothy and other cultivated grasses to be grown. The wild grasses, hay and browsing upon those portions of the bottoms not successfully reclaimed would, in connection with such grazing as the east side-hills afford, be while uncovered by water a not unuseful addition to the grazing and dairying capabilities of the bottom lands that were reclaimed.

EASTERN VALLEY.

The eastern valley of Kootenay forming part of the extraordinary long valley already mentioned as stretching along the base of the Rockies far north and south of Kootenay District, is Kootenay Proper—the Kootenay Lake section and the western leg of the Columbia being adjunctive areas to the eastern valley in relation to capabilities of settlement. It is about 300 miles long from the boundary to Boat Encampment, and for the most part has an average width of 8 or 10 miles. The mother lakes of the Columbia, 2,850 feet above sea-level, lie about the centre of the most valuable part of the valley. From them the Columbia flows north, and from their neighbourhood a portion of the Kootenay flows south, through the valley. It is one of the prettiest and most favoured valleys in the province, having good grass and soil, a fine climate, established mines and promising mines, excellent waterways and an easy surface for road making. Its chief navigable waterway leads to a station of the Canadian Pacific Railway.

Grass—East side of the Valley.

The east side of the valley may be called a grazing region of about 4 to 6 miles in width between the waterways and the Rockies, and 250 miles in length from the 49th parallel (international boundary) to Kicking Horse Pass, or even to Blaeberry River. The prevailing grass is bunch-grass of good quality, but to this there are some exceptions. There are 20 or 30 miles between Sand Creek and the boundary where the wooded rolling hills of the watershed between Elk River and the Kootenay cause too much shade for continuous bunch-grass, and give rise to pine and other grasses. A similar cause affects the low upland between Sheep Creek and the mother lakes. About 70 miles down the Columbia from these lakes, the country becomes rather wooded, and the stretch thence to Blaeberry River, in consequence, is characterised by pine and other grasses with bunch-grass wherever the absence of shade permits its growth.

Grass—West side of the Valley.

The west side of the valley is a grazing bunch-grass region from the boundary to a point also far north, but not so far north as on the east side. The wooded hills close in upon the river about 30 miles down the Columbia from the mother lakes, and end the grazing area on

the west side, south of the Spallumcheen River. Two sections within this grazing area on the west side afford inferior or limited grass. The hills with their moister western flanks forming the watershed between the Yahk or Mooyie and the Kootenay come too near the Kootenay for a portion of its course between the boundary and half-way up to Joseph's Prairie to give much scope for grazing. There also is a wooded somewhat rough area for some miles south of Findlay Creek and about its mouth.

Grass—Summary.

With the above exceptions the portion of the valley described forms a first class grazing area equal to about 250 miles in length by 4 or 6 in width. It is as good a grazing section as Okanagan. The general appearance of the valley is not unlike that of the South Thompson above Kamloops. Some of the lateral valleys, for instance, Findlay Creek, which opens out above the cañon near its mouth afford excellent summer grazing. I should mention that the upper course of the Kootenay until it enters the eastern valley near the mother lakes and also the Elk River valley, are timbered pine grass regions.

Winterage.

The snow-fall varies locally from causes difficult to assign. It is less than in the Kootenay Lake region or on the western leg of the Columbia. Over the whole valley up to half-way between the mother lakes and the railway first crossing of the Columbia it may be said to average 18 inches to 2 feet, which of course covers bunch-grass that has been much eaten. But in several localities the average is only one-half of this fall, and the snow seldom lies long of even these depths; the warm wind comes; perhaps half or more of the snow melts; then another fall and so on; towards spring there may be only 9 inches in parts. It thus happens often that cattle need not be fed, though here as elsewhere winter provision is desirable. From "Steamboat Landing" northward the snow-fall is about a foot deeper, but winter thaws occur there too.

The wild hay question is one of great importance. I paid attention to it but had not time to examine it thoroughly. Stock-raising has been such a small business in this valley hitherto that the hay capabilities of the district are not tested. Some say the country is deficient in this respect, but I am not satisfied that this is the case. One perhaps cannot say that except up towards Kicking Horse River there are any extensive natural meadows on which hay could be cheaply cut and stacked. I however saw some good meadows, and think that more may be discovered. Superficially viewed an observer would say that the great river beds of the Columbia and Kootenay where there are miles of swamp grasses with good aquatic trees for browsing and shelter are the natural complement for winterage of the excellent summer ranges. Objectors say, and in what they say is some truth, that these swamp grasses unmixed as they are with red-top or blue-joint, are not sufficiently nutritious, that after being cut for a few years they cease to yield eatable hay, and, also, that they cannot be cut easily owing to the lumpy or tussocky surface caused by the action of the frost and the peculiar natural growth of the plants. But I saw some good meadows in the occupation of a settler on Mouse Creek where the grass was similar to that upon the bottoms, and he said he had proved it to be good hay for cattle when cut in September. The cattle thrived on it and liked it better than some timothy which he grew. Another settler showed me fine hay-stacks of Kootenay bottom grass cut with a mower where the surface was not lumpy. The tussocky bog-growth is in many parts a difficulty no doubt, but I am inclined to think that a bog-cutter would overcome it. The utilising of the river bed swamp-grass gives importance to the question of turning the upper course of the Kootenay into the Columbia; the extensive bottoms of the Kootenay relieved from at least a portion of the river overflow would produce naturally better grasses, and make the expense of cutting them more worth while. If quite relieved from water the swamp grasses will cease to grow; the overflow makes them.

When settlers have occupied all the detached meadows in the valley, the question will arise whether under the circumstances that may then exist, it will be cheaper to cure the river bottom grasses, or to make meadows, irrigate bunch-grass fields for bunch-grass hay or cultivate timothy or alfalfa. There are large areas of swamp-grass in the river bed of the Columbia as well as in that of the Kootenay. I do not think the turning of the upper course of the Kootenay into the Columbia would much affect them.

The Canadian Pacific railway are going to use about 300 acres of fine meadow land on the lower part of Upper Kicking Horse River. There are other good meadows in that neighbour-

hood, for instance on the Beaverfoot River, etc., more on the east, I think, than on the west side of the Columbia.

The soil of the eastern valley is undoubtedly fertile, but its qualities have not been fully tested as very little farming has been undertaken as yet. I think that both the soil and climate are suitable for agriculture for at least 150 miles up the valley from the frontier. The soil will yield wheat and whatever else is grown in Kamloops or Okanagan, though the greater elevation and the differing nature of the soil will require more care in Kootenay than in those districts. The soil must be well worked and crops attended to in a manner which experience will dictate. A whitish clay soil from one to three feet in depth, but in some places along the river of great depth, is the common top-soil in the Kootenay valley. This generally overlies a porous gravelly subsoil. The porousness of the subsoil makes a plentiful supply of water necessary in irrigating, but if too much water is applied or water is unskilfully applied, the soil is apt to cake and become too hard. A more retentive subsoil occurs in parts, for instance at the forks of the St. Mary's and the Kootenay, and in other parts of the low land near the river. The facilities for easy irrigation are pretty much what they are in the Yale District interior of the province, fairly good but not in proportion to the arable land. Probably the best soil in this Eastern valley is on the river bottoms subject to periodic overflow, and therefore at present unavailable. These contain about 20,000 acres, which some think would be available for arable farming if the overflow of the Kootenay were reduced by the turning of the upper course of that river into the mother lakes of the Columbia. Irrigation of the bottom lands might then be required —though generally in this district irrigation is not so necessary as in Yale District—and it might be necessary to construct flumes to bring a plentiful supply of water from a distance in order fully to utilise them.

The prevailing soil in the region of the mother lakes of the Columbia differs from that in the lower part of the Kootenay valley as the district once has been the bed of a great lake. It is more silty and varied. The soil is largely derived from the waste of the limestone rocks which occur on the eastern side of the valley. You sometimes find a thin coating of vegetable mould overlying whitish clay 18 inches to 2½ feet deep, superimposed upon a considerable depth of adhesive and probably porous gravel. But the soil seems to vary every few hundred yards. The top-soil in some places a light sandy loam on gravel; elsewhere on bluish clay. I noticed on one flat about 6 inches of vegetable mould and a gravelly subsoil of a foot resting on clay. The garden of a settler on the east side of the lower mother lake showed 2 feet of black loam, then 5 feet of clay (out of which he had made a capital chimney) and then gravel and dirt. He showed me wheat, beans (climbers), peas, carrots, cabbage, potatoes, etc., and mentioned that at his farm the strong frosts did not come until October. His potatoes this year were green for 22 days after the 9th September. The farm was back towards the Rockies from the lake. Probably the frost comes earlier on lower land near the water. Wheat certainly will ripen well in most years on the east side of the mother lakes at an elevation of about 2,900 feet, though whether it always will be a sure crop is not yet tested. Some of the beans in the above garden were just touched, but not to hurt, by a light frost that had come after a heavy rain on the 3rd September. This settler did not irrigate. Vegetables of various kinds have been grown 20 miles lower down the Columbia, but it is doubtful if they would thrive owing to the summer frosts farther down towards the "Steamboat Landing." On the west side of the mother lakes, tillage has not been tried, but I do not know why crops should not grow there also, though the climate from local reasons may not be quite so good as on the east side.

Timber.

The whole Eastern valley is more or less wooded, but of course thinly wooded in the extensive areas of bunch-grass—a grass that will not grow well in shade. The portion of the valley examined by me will not afford much timber for export. It does not grow in large bodies, and though there are many trees 2 or 3 feet through, the trees generally are rather small. There is a fair body of timber, chiefly yellow pine (pinus p.), rather loosely spread on the Kootenay about the mouth of Findlay Creek, which might be taken down the Columbia to the railway for shipment east of the Rockies. My explorations did not reach the country between Kicking Horse Pass and the Boat Encampment, but several persons who had visited that section told me that its timber in their judgment was inferior. It would take two season's work to estimate correctly the timber capabilities of the Columbia alone. My whole trip was a hasty reconnoissance.

The prevailing tree in the eastern valley from the boundary up to the mother lakes is the yellow pine (pinus p.), mixed with black pine, Douglas fir, tamarac, etc.,—tamarac prevailing on the foot-hills of the Rockies. The yellow pine almost ceases at the mother lakes of the Columbia, and the Douglas fir takes its place among the bunch-grass. The latter is of small growth and will be used for fences as it is more easily hauled than cedar, which, with tamarac grows mostly up the gulches. The soft-wooded white spruce loving moist soil is a fair carpentering timber. I saw floors and boats that were built of this timber. I did not notice more than a few scattered white pines.

Mining.

The eastern valley has mineral as well as arable and grazing resources.

Dr. Dawson ascertained in 1883 that the true coal formation of the Bow River District crosses for a short distance into the south-east angle of Kootenay. It is there however so far from easy means of transport that the coal can only have a prospective value. He did not notice any tertiary rocks in the valley during his rapid journey through it when dense smoke prevailed. A gentleman in Kootenay told me that his brother had seen a coal vein 7 feet thick on a tributary of Elk River, called Marten Creek, but he could not say what the nature of the coal was. Lumps of float coal have been traced from Elk River down the Kootenay as far as Bonner's Ferry. This probably was lignite or it would have been broken among the boulders in the river. Another informant said that he knew where there was a vein of coal in the Kicking Horse district. I had not time to examine any of these reported discoveries.

The old established gold mines of Wild Horse Creek are in the valley. More than 100 men are still working there. The history of these mines is too well known to need repetition. Some half-breeds had found gold on Findlay Creek in the fall of 1863 and told people in Montana of their discovery. A party on their way to Findlay Creek got the first prospect at the mouth of Wild Horse Creek, in March, 1864. In that year there was a rush, and a larger rush in 1865, but towards the end of 1865 the Blackfoot mining excitement drew off a large part of the floating population. Perry Creek caused a short rally in 1869 and again lately. The Weaver Creek excitement was in 1870. The region of the head waters of the Mooyie is a gold country. In July, 1882, coarse gold—one lump worth $\$3\frac{1}{2}$—was found by crevicing on Bull River, and during spring of 1883, three men took out about $700 with rockers in a few days. These facts show that the southern part of the valley is a gold region. Little doubt exists that Findlay Creek and other streams in the neighbourhood of the mother lakes of the Columbia will yet yield a harvest to the miner, when the prices of supplies and prospecting conditions are favourable. Gold was found in 1883 in a creek on the west side of the Columbia near Kicking Horse River. Good miners confidently expect to find gold quartz ledges towards the head of the valley at the upper part of the Big Bend. Nor is the valley without its galena silver-bearing deposits, perhaps as good as the better known Kootenay Lake Big Ledge. Ten miles up the Spallumcheen River, which flows from the west into the Columbia 79 miles from the head of the upper mother lake, there is a galena deposit—a large cropping, the top of which one can follow without a break for the length of the claim. It runs N. E. and S. W., with a very slight dip. The probability is that there is more of it. The ore differs from that of the Kootenay Lake Big Ledge. It carries carbonates of lead and iron and what appears to be oxide of copper. The quartz is in spar; it is not quartzite as at the Kootenay Lake mine. The specimens that I saw were remarkable in their variety. Assays have shown that the ore carries silver, but no sufficient assay has been made as yet. The discovery certainly is a good prospect, but of course everything will depend on what further work and proper assays will show. The claim is held at present by Messrs. Jones and Isaacs. In its general character, it seems to resemble the silver-bearing galena ore lately discovered towards Calgary which some think is in British Columbia and not in Alberta, the eastern boundary of the province not having been as yet determined.

The first and main requirement in the development of Kootenay is suitable means of communication down the whole eastern valley from the Canadian Pacific railway to the boundary at the 49th parallel. All applications for expenditure on communications within the district should be considered in their relation to this necessity. It is a misfortune for Kootenay that the Canadian Pacific railway runs across its principal valley and not down it. Fortunately a navigable river runs down a portion of the valley. A steamboat should be placed on that stretch of the Columbia in order to rescue the district from isolation. The settlers also will require a winter road to the railway. There is a fair trail from the mother

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lakes down the east side of the Columbia to "Steamboat Landing," but beyond that thick timber begins and the trail is so rough that the Canadian Pacific survey supplies were shipped there and the trail not used. The southern part of the valley requires equal attention. A trail runs from the mother lakes down the east side of the Kootenay to the boundary, but there should be a waggon road. This could be made with comparative cheapness. A humorous Kootenayite, on whom age sits lightly, said to me that the Government made roads through Eagle Pass and proposed to make a railway from the Columbia to Kootenay Lake, but did nothing at all to develope Kootenay Proper—the Eastern Valley.

It is wrong to judge of the value of an undeveloped part of the province by a debtor and creditor money comparison. A judicious expenditure is necessary to enable a district to produce an income. That expenditure is of the nature of a capital account—a special, separate charge. Until Kootenay is opened by communications and linked to main lines of transport, criticism of the progress of the district really is a criticism on our management of it.

THE LANDS RESERVED BY THE GOVERNMENT IN CONNECTION WITH THE AINSWORTH GRANT.

No part of these lands is within, or near to, the Eastern valley of Kootenay, which I have called "Kootenay Proper." They consist of—

(1.) Tracts on a portion of Kootenay River and round Kootenay lake;

(2.) Tracts on each side of the proposed railway from Kootenay Lake to the mouth of the Kootenay River (on Columbia River);

(3.) Tracts on each side of the Columbia River from the United States boundary to the head of navigation;

not to exceed in all 750,000 acres, of which no part shall be within 20 miles of the Canadian Pacific Railway.

Adopting the common view, which, however, is not made clear by the Act, that the grantees have to take possession of the lands in alternate "sections," beginning at the first-mentioned points in the description of the tracts to be reserved by the Government, I will endeavour to give some notion of the general character of the extensive area included within the reserve.

(1.) Tracts on a portion of Kootenay River and round Kootenay Lake.

If the Government take the first block north from and beginning at the point on Kootenay River, 15 miles from the boundary, the grantees will have very little land on this part of Kootenay River, as the estimated distance, straight from the boundary to Kootenay Lake, is little more than that. Anyhow this land need not be described under the present head, as it is bottom land and the description of the Grohman leased land, hereinbefore made, includes it.

The hill sides round Kootenay Lake, part of the reserved land, are steep and are backed by mountains. Long, narrow sandy beaches, and low, rocky, generally rounded promontories, like those on the inner side of Vancouver Island, are common on the lake margin. A torrent flows in at almost all these beaches, having in fact helped to form them. Not many even small agricultural areas can be found. A few low lying areas near the water, also small basins or narrow beaver-dam bottoms among the hills, may perhaps be cultivated some day as gardens or farm patches. Near the mouth of the Lardo, at the north end of the lake, there are about 1,500 acres of overflowed bottom land that probably could be cultivated, if reclaimed, but the extent might not justify the cost of reclamation. The soil round the lake is scanty; much of it has been washed down into the lake. Rocks are frequently exposed on the steep ascents, but the vegetation comes down to the water, the trees being tall rather than thick. I am inclined to think that the soil in most parts will not prove to be sterile. It may be expected that potash and soda, and even magnesia, will be found in the soil of a granite and mica-slate country, besides which, the soil, in many parts, is similar to that of the side-hills up Kootenay River where Messrs. McLoughlin and Hall have grown various crops. The great fires that take place reduce the already scanty covering of soil along Kootenay Lake. They of course destroy the animal and vegetable matters in it, but, perhaps, in the little basins above-mentioned where the soil is apt to be stiff, damp, and cold, the burning of an excess of inert vegetable matter may be beneficial by leaving carbonaceous matter among the ashes and making a warmer bed for vegetable life.

If the region ever has a mining population and the bottom lands of the Kootenay River are not reclaimed, scattered patches around the lake may be cultivated for vegetables or some

of the hardier fruits, but as a place for agricultural settlement the region is not worth talking about.

As regards grazing, the hills, as above said, are steep. Extensive areas have no grass at all, only weeds. Where the soil enables grass to grow, it is the shade-loving pine grass. The usual swamp grasses are found in the beaver-dam bottoms among the hills, and at the mouths of some of the streams, but taken altogether, the grazing capabilities of the region round Kootenay Lake are about on a par with the arable capabilities.

Timber on Kootenay Lake.

The dense smoke that covered the region during my visit, limited my personal knowledge of some parts of the lake.

The steepish rocky hills appear to be everywhere covered with trees, but extensive areas have been burned. The trees are in great variety—Douglas fir, western larch (tamarac), white, black, and yellow pines, balsam firs, birch, maple, cedar, hemlock, yew, cottonwood, &c.,—resembling in this varied character the forestry of the Cascades rather than the Rockies. But the lie of the land, the scantiness of the soil, and the effect of recurring fires have prevented the superior tree-growth which the climate favours. The trees in general are small. Where not scrubby they are rather tall in proportion to their thickness. There are few places where one can speak of a body of commercial timber. Probably Douglas fir is the prevailing tree, then tamarac and cedars. Black pine is abundant on the elevations and balsam firs towards the mountain summits. The yellow pines are scattered among the other trees towards the lower end of the lake, and the white pines, some of them good trees, occur also dispersedly.

The timber on Kootenay Lake is more valuable than the arable or grass land, but it is not of much value. Locally, it may be available for mining or smelting works and for the settlers on the Kootenay River bottoms, if ever these are reclaimed. To an eye accustomed to the fine timber of our coasts, the timber generally round Kootenay Lake may seem to have less economic value than some of it may yet have, considering its situation on navigable waters and the dwindling of forest areas in the United States. The great mass of the accessible timber is, as above said, slender, not scrubby but rather tall in proportion to its diameter. The larger trees that would make good saw-logs are scattered, and the surface of the region generally is unsuitable for team-logging, though there are several benches and flats where a team could be employed. I do not consider the timber round Kootenay Lake as of much present value, and it is a question whether it would be worth a speculator's while, not locally interested, to buy timber tracts there in the hope of a demand for it in the United States within any short time. There are better timber tracts yet untouched in United States territory, immediately to the southward.

Timber cannot be sent from Kootenay Lake to the Canadian Pacific Railway.

Soil of the side-hills of Lower Kootenay Bottoms.

The characteristic soil on these side-hills generally is a heavy clay, sometimes arenaceous and changing to a lighter sandy loam in parts. The soil in general, which is superficially thinly mixed with vegetable mould, appears to be generally fertile. The clay when found by itself would, like all heavy land, require special treatment, and would then produce heavy crops of wheat, &c. It is a clay which, when ploughed and exposed, should be a good productive soil. The sandy clay soil would be excellent permanently for barley, oats, beans, peas, &c. The fine white heavy sand itself is a wheat soil, but probably would give out after a few crops.

The east side-hill country affords a considerable but not connected area of variably fertile land, cultivable under conditions that may be estimated from what has been said above. Men will not try to make farms there unless there are local markets and small hope of the bottom land being reclaimed. The surface is wooded, and its rolling if not hilly character makes it unattractive to the arable farmer. In many places where there is not much slope these soils will not require irrigation, but this might be necessary where the sandy soil occurs and particularly in the drier section south of the boundary line. The facilities for irrigation, as has been said already, are not great; there are few large streams or mountain lakes. The numerous small bowls or basins holding superficial water and the springs would only suffice for a small area.

There have been only two attempts at cultivation on these east side-hills by white settlers. Farm No. 1 is upon a comparatively open spot close to the bottoms with a good southern exposure; soil chiefly a sandy clay. Farm No. 2 is higher up on the hills—an old beaver swamp with a soil of heavy bluish clay, formed apparently by the decomposition of feldspathic

rocks. On No. 1 farm wheat is a sure crop. Sown end of March or beginning of April; it is cut from 10th to 15th August. Fall wheat did not succeed in 1882. Snow did not cover well. Oats, and especially barley, gave great yields. Timothy and the grasses succeed well. Potatoes large and fine. No irrigation. *No. 2 farm*—Wheat a sure crop. In 1882 fall wheat failed; ground frozen before snow came. Oats very good; barley short; soil perhaps not good for barley; potatoes, roots, and vegetables generally thrive, except beans; tomatoes ripened in open air, melons failed; timothy very good; no irrigation; land lies flat; subsoil retentive. No. 2 farm is about two weeks later than No. 1 farm, which latter is close down to the bottoms and sunny. Snow, as a rule, goes first week in April; wheat then sown ripens middle of August. First frost first week September.

The grass on these east side-hills, especially south of the boundary line, is characterised in the open sunny parts by a species of bunch-grass less stout and bunchy than the Kamloops grass; elsewhere pine grass prevails. The latter is the common grass between the boundary line and Kootenay Lake; there is very little bunch-grass; probably it would grow if the timber were burned off. I would class these wooded pine grass east side-hills within our territory as a third class summer stock-range for moderate bands; they do not possess naturally winter food and shelter for any number of stock. They have a certain value in relation to the bottom lands at present. Stock like the young spring grass on the hills but seek the bottoms as soon as that grass is dried by the sun. The inundation of summer forces them again to the hills, but on the subsidence of the water most of the cattle and horses return to the bottoms and appear to prefer them until next spring.

If the cattle remain on the hills, the inferior grass causes them to wander much in search of better food and perhaps, also, seeking freedom from mosquitoes and gnats, and as the country is not easy for riding through, the range is one on which cattle are difficult to find.

Patches of saline clay occurring generally as banks or small ridges are distributed along the hill sides.

Kootenay Lake Mining.

Very little is known of the mineral resources of Kootenay Lake. It looks like a mining region, but prospecting for gold has not been very successful hitherto. The old galena ledge on the east side, which contains moderate quantities of silver, has again attracted attention, owing to the approach of railways to the district, and, perhaps, more largely owing to improvements in the process of separating the silver from the lead, which create hopes that such low grade ore may now be handled profitably. Galena ledges, supposed to be silver-bearing, have been discovered last year on the west side of the lake. Practical men who have been sent to examine the region generally, and have spent several months in exploring, have been satisfied with its promising character. Almost everybody who was employed on Kootenay Lake in 1883 has what he considers to be a silver-bearing galena claim. Half a dozen men regard themselves already as Comstock millionaires. There is nothing in the facts as yet to justify any such belief.

Galena, or sulphuret of lead, which contains, if pure, 86 per cent. of lead and 13 per cent. of sulphur, is found almost everywhere in the United States except in the bituminous coal regions. Several varieties of galena contain silver; when in large proportion the ore is generally mixed with other minerals. Some authorities say that any galena which yields fifty ounces of silver to a ton of ore is considered a silver ore in the United States. The difficulty of smelting this ore profitably, even when containing much silver, has for a long time checked the working of deposits. Of late, as above said, processes have been improved, and galena ores in good localities for mining, working and transit, containing less silver than it was considered possible to utilise formerly, are now worked to advantage. The question about the Kootenay Lake galena ores is whether they are in sufficient quantity; whether the silver that is in them and the conditions of working bring them within this workable class. It is not solely a question of the percentage of silver, it also is a question of circumstances; 30 ounces of silver to the ton might pay in one place; the same might not pay in another. Men acquainted with the conditions of extracting silver from galena think it worth while to fight in the law courts about these claims. But experience alone will test the real value of these deposits. At present it may be said that there is a good deal undetermined. Even as regards the Big Ledge on the east side of the lake, it cannot be said whether it is a mass or a stratum of ore only. It may be called a good prospect. Work in earnest to develop the claims and strike into the centre to test their true character has not yet begun. Still the fact as above said of contention for

the possession of some of the claims, possibly not the best in the region, shows that it is believed that there may be something in the deposits, either for speculative acquirement and sale or for legitimate mining. This is a weightier fact than a few reports of assays that have been made public. It is misleading to assume anything from the appearance of ore; the honest assay of a large collection of representative specimens from a lode is the true test. One of the contestants has employed an assayer on the spot to examine the ores, but the result of course is not known outside. Having no such general assay results before me, I do not quote reported assays of a few specimens, but may state, as a general opinion, that probably the margin for profit in working such a galena ledge as that on the east side of the lake will be somewhat narrow, and much dependent on the command of favourable conditions. The chief hope for Kootenay Lake mining is that there may be other galena mines with a larger percentage of silver. It is possible that such mines may be found around the lake at a higher elevation. An isolated mine of the character of the Big Ledge on the east side must be worked at a disadvantage unless other mines are worked also. Without the means of smelting such low grade ore on the spot, the business would be hopeless. Fortunately this business, which is quite a different one from the mining of minerals, can be carried on at Kootenay Lake; the locality furnishes the requirements. But smelting operations can be most successfully carried on where a variety of ore is obtainable, not only of different chemical compositions, but also from different mines. They can only be profitable when conducted on an extensive scale. A single mine is not always in a condition to furnish a regular supply of ore, but if other mines were found, the smelting works could be fed. All this points to much capital, the best management and economy, as necessary to make Kootenay Lake galena mining pay, with the accompaniment of a considerable general mining development in the region.

SECOND AREA IN CONNECTION WITH AINSWORTH'S GRANT.

The second area of the reserve that may be mentioned is the strip along the Kootenay River from the outlet of Kootenay Lake to the Columbia River. The length of the river by rough estimate is about 22 miles. The line of the proposed railway is longitudinally through this strip, but on approaching the Columbia it may perhaps turn northerly and come in a couple of miles above the mouth of the Kootenay River. This would avoid the "Kootenay" rapids of the Columbia, which are immediately above the mouth of the Kootenay River, but whether that northerly turn would improve the railway route is not known, as only a reconnoissance of the locality has been made as yet.

The width of the Kootenay varies in this portion of its course, but, probably, is about 400 feet. The number of portages depends somewhat on the stage of water. At high-water canoes can run the first rapids at the outlet. Speaking of the river in August, the whole stream, a mile and a half down from the above rapids, falls sheer about 12 feet. The rapids immediately above this fall and those immediately below it, together with the fall, probably cause a total fall at this place of about 20 feet in quarter of a mile. After 3 or 4 miles further of rapid water navigable by canoes, another 10 feet fall is reached, beyond which a similar stretch brings the traveller to the big falls. These consist of two falls, separated by rapids, each fall about 25 feet, but estimates vary much. The portage is 2½ miles. An expansion below the falls, with islands in it at some stage of the water, affords fine scenery. Onward for 10 miles the water generally is rapid and very rough in parts, leading to a bad rapid where a portage of 1¾ miles is necessary. A mile of comparatively easy water then reaches the Columbia.

It is unnecessary to say that such a stream is useless as a commercial route.

The land on both sides is rough, as might be expected in a narrow break through the hills. The margin of the river is not terraced, but is struck by low spurs of the hills, that make numerous ravines. There are no "box" cañons or formidable rocky bluffs that cannot be for the most part avoided by a road or railway. The rock chiefly is loose granite. It is neither an easy place, nor is it from an engineering point of view, a very difficult place for a railway. Probably a railway could be made in a single long season, if everything for a start were previously provided in such a remote place. There is no agricultural or grazing land worth a description within this portion of the reserve. The timber is inferior and scanty, and has suffered much from fires.

LANDS RESERVED ON THE COLUMBIA RIVER IN CONNECTION WITH THE AINSWORTH GRANT.

I ascended the river from the boundary to Eagle Pass, but have no personal knowledge of the land north from thence to Death Rapids. The soil all the way up seems to be of pretty

uniform character. It probably may be described as a light sandy soil, hardly a loam. I should expect it to be fertile, but easily exhausted. There are some localities where the soil is rather clayey. Near Fort Shepherd and elsewhere these have yielded crops under irrigation, but no white settlers till land on the Lower Columbia at present.

GRAZING WITHIN THE AINSWORTH RESERVE ON THE COLUMBIA.

As regards grazing on the western leg of the Columbia, there is a bunch-grass country for over 30 miles above Colville, in United States territory, and bunch-grass grows more or less up to near the boundary, and raggedly on a few low sunny benches for some distance within British territory (along the Pend d'Oreille there is a not inconsiderable area of fair bunch-grass), but there is no natural pasture, properly speaking, available for bands of cattle along the Columbia from the boundary to Eagle Pass, and, I should think, very little, if any, above that point up to Death Rapids. There may be summer browsing in parts and a picking of pine grass for a few head. Hay land, also, is deficient both on the water way and the bordering streams. The grassy patches at the mouth of the Kootenay, and the strips along the lake beaches, are hardly worth mentioning. There are about 250 acres of overflowed swamp grass land at the head of the eastern arm of Upper Arrow Lake, and similar patches in a few other places—for instance along expansions of streams and in upland hollows,—but the winterage hay these could afford would not be much in the aggregate, and it grows in scattered localities. I do not think it likely that there will be any farming settlers on the western leg of the Columbia for a long time, unless in particular localities for the supply of any lumbering or mining industries in the neighbourhood, and these will compete at a disadvantage with produce that can be brought by railway and steamboat from the Upper Columbia, Yale district, and other better agricultural places.

As far as I can ascertain, much of what is said above applies also to the portion of the reserve up towards Death Rapids, which, as above said, I have not personally examined. It is known from experience in the old mining days of Big Bend that the soil and climate, as far up at least as Gold Creek, will permit the growth of ordinary garden produce in suitable localities.

It is noteworthy, however, that the Fort Shepherd Indians—British Indians because they lived there before the Hudson's Bay Company's post, now abandoned, was established, and who spend their summers on the Arrow Lakes—have taken up their residence at Colville, in United States territory. Several of them said to me that they would rather live on the British side, which they regard as their country, but they could not find farming and grazing land on the western leg of the Columbia such as their partial civilization requires, and which they find in the Colville district.

TIMBER.

You go pretty well 130 miles up the Columbia from the boundary before coming to any apparently good timber areas. The trees up from the boundary for the most part are small and scrubby, creeping in gradations according to their nature to the summits of the low hills visible from the river wherever they can find soil on their rocky slopes. They consist of yellow pine (pinus ponderosa), black pine (bull or western scrub), western larch (tamarac), Douglas firs, &c., which in this area need not be further described as they are of little commercial value. The limits of the bunch-grass on this part of the Columbia, and the heavy yellow pine (pinus ponderosa), both of which love dryness, are not here the same; the pine here goes much farther north than the grass, differing in this from the part in the Eastern valley of Kootenay where the yellow pine almost ceases at the Upper Columbia Lakes, Douglas fir taking its place there among the bunch-grass. The mixture of the drought-loving yellow pine with moist-loving trees is a peculiar fact in the forestry of Kootenay, for instance, the two finest heavy yellow pines I ever saw are in the Mooyie valley, which derives its name (corruption of the French "Mouillé") from its wetness. An inferior growth of yellow pine is found scattered on the benches and sunny lower slopes, chiefly on the left bank of the Columbia a long way up from the boundary towards the mouth of Kootenay River, and it re-appears in considerable abundance and often of good size in Lower Arrow Lake, ceasing, however, in the wetter Upper Arrow Lake region. This tree, I need not remark, is the familiar tree of the district—a tree usable for general purposes when well grown, but much less valuable than Douglas fir and white pine. It would never compete with our Coast Douglas fir exports, but, in a dearth of timber, might be manufactured and sent south and east from the Columbia. There are a good many yellow pines of fair size for logs towards the head of Lower Arrow Lake.

The Douglas fir or spruce is a common tree in Kootenay. The bark is blacker than on the coast trees. It grows abundantly on the Columbia, occurring in mass towards the head of Lower Arrow Lake and on Upper Arrow Lake, and on the water-way above the latter lake, chiefly on the hill sides, but I did not find it as large as that upon the coast. The most of the trees are young, but they would make good tie timber. The Douglas fir, next to the white pine, of course would be the most valuable of all these timber trees if occurring in quantity and of suitable growth.

The tamarac probably is the commonest tree in Kootenay. It is not found in the province west of Shuswap Lake. I had a good opportunity of observing the prevalence of the tamarac from its yellow autumnal hue that decorated the prospect. It constitutes about one-third of the forests on the Lower Columbia and Arrow Lakes, but appears to cease between Upper Arrow Lake and Eagle Pass. Its general appearance is that of the Scotch larch with a redder bark. It grows larger but is said not to have the same excellent timber qualities. It is a very heavy wood, lasts well under ground, and is good for rails, and next to cedar for easy splitting. Some say it does not hold nails well, and therefore is not suitable for ties, but against this is the fact that it is used for ties at least in the Pend d'Oreille division of the Northern Pacific Railway. I believe there are two varieties of this tree, but I had not time to satisfy myself on this point. In some parts it grows large; those I saw on the Arrow Lakes were of small growth. In commercial value, the tamarac probably would about rank with the heavy yellow pine.

The western hemlock, which is like the eastern hemlock but larger, is found first in ascending the Columbia towards the head of Lower Arrow Lake, indicating the occurrence of an increased rain-fall upwards from that point. It is abundant in Upper Arrow Lake, and higher up on the Columbia and through Eagle Pass. It is probably the best grown tree in the region; the big trees are generally on the uplands. Unfortunately the wood, unless it differs from the hemlocks of the coast, which is improbable, is of less economic value than that of any of the trees above-mentioned.

The mountain pine (white pine) is very generally distributed among the other trees, as individuals, or, at the most, in groves rather than masses. Though supposed commonly to love elevations, it is found in various parts of Kootenay, growing to a goodly stature, also on low ground among cedars. I did not see any areas into which it would pay to put a logging team for the sake of the white pine alone, but there may be such places. It is unnecessary to say that this is, as wood, the most valuable tree of the region, as the wood resembles that of the eastern white pine and can be used for the same purposes.

There is a considerable quantity of cottonwood of good growth on the flats of the Columbia, but I cannot form an opinion as to its probable value without further examination. I am inclined to think it differs from the coast cottonwood, which is suitable for various purposes, for instance sugar barrel staves.

The last important tree to be mentioned is the western cedar (giant or red cedar). This is common along streams and on flats, and grows occasionally to a great size, but most of the trees are from 15 to 20 inches in diameter at a third from the butt. The quantity of cedars is very considerable. Here, as elsewhere in the province, the large trees are generally hollow, but this does not prevent them from furnishing a large proportion of available timber. A test with the axe showed that in some places about a third of the small cedar trees were decayed at the heart for 10 or 15 feet up; in other localities the proportion of sound trees was greater. The durableness and easy splitting of the cedar, and the cheapness with which it can be "logged" on many parts of the Columbia may create a demand for it east of the Rockies.

The existence of these considerable tracts of timber land suggests the question whether the timber can be utilised. Hitherto its remote situation has made it of no value. The construction of the Canadian Pacific Railway must immediately raise the value of these timbered tracts by connecting them with the extensive treeless region east of the Rocky Mountains that cannot be very well supplied with timber from distant Keewatin, or from the northern timbered region of the Canadian North-West Territories. Probably all kinds of timber will be in demand and the smallness of the trees will not be so great a defect for that eastern market as it would be for saw-milling on our coast. The lumbering business on the Columbia will be one of the greatest industries in the province within a few years. There is an extensive treeless region also in United States territory to the southward, which gradually is becoming settled. Since the opening of the Northern Pacific Railway and its branches, this is not so badly placed for timber supplies as the Canadian territory mentioned, but, nevertheless, it may be found necessary or profitable to draw these to some extent from the Columbia River in our

province. The tariff, plus the transport charges, may prevent manufactured wood from being sent far into the United States, but it is believed by some that, notwithstanding the Canadian export duty of one dollar a thousand on logs, or by trimming the trees so as to prevent their classification as logs, wood from the Columbia can be floated down the river to supply saw-mills placed within American territory near to the Northern Pacific Railway. I had no time to examine this question. The description already given of the river immediately south of the boundary, shows that somewhat expensive improvements would be necessary to make safe driving. The chief export of lumber will be by the Canadian Pacific Railway to supply Canadian territory east of the Rockies.

MINERALS WITHIN THE AINSWORTH RESERVE ON THE COLUMBIA.

With respect to minerals on the western leg of the Columbia from the boundary to Eagle Pass, I cannot pretend to say anything as the result of a ten days' canoe trip up the river on the eve of winter. A few Chinamen were mining for gold on the banks below the boundary, and I noticed some worked-out diggings farther up the river within our territory, but no one appeared to know whether the tributaries of the Columbia and the Arrow Lakes had been prospected thoroughly. In the early mining days, men passed on up to the Big Bend region. The impression is that gold probably exists but in small paying quantities at the present price of commodities. I was told that iron ore had been seen, but the particular locality was unknown to my informant. The only systematic exploration of this section for minerals in general is that of the "Kootenay Bill" grantees last summer. A gentleman employed by them, accompanied by two Indians, spent three months on the Columbia, the Arrow Lakes, and up the Ille-cille-waet River, and took away samples with him in the middle of October. I of course have no information as to where these were found, what they were, or the results of their assay. The Government can only get similar information by a similarly complete leisurely method of exploring.

The foregoing description of the lands reserved in connection with the Kootenay Bill shows—

1. That the agricultural and grazing capabilities of the tracts are limited.
2. That the timber has considerable value if, as is expected, a transmontane demand for it arises, but the timber is in belts and patches, covering altogether (speaking of merchantable timber) a moderate part of the reservation.
3. That no systematic leisurely exploration for mineral indications has been undertaken in the interest of the Government.

The existence of gold in quantities, which may or may not prove attractive, on the Lower Columbia and on Kootenay River between Kootenay Lake and the Columbia is known.

A belief, stronger now than formerly, also is generally entertained that, with means of transport for lead, it may be found possible to work profitably the low grade silver bearing galena ores in the Kootenay Lake region, which seem to be in considerable quantities, though whether as mines or strata is undetermined.

TRADE.

The peculiarities of the territorial structure of Kootenay district, of course have a great influence upon its resources and upon everything connected with its settlement.

I will now mention the *Trade* question as of present interest to many.

The trail to Kootenay through our own territory, known familiarly as the Fort Shepherd trail (by Rock Creek, Kettle, and Pend d'Oreille River and Summit Creek), has not been used for many years, and is not in passable condition. The district has been supplied of late years entirely from the United States. There not having been any duly constituted United States bonded route along our southern frontier, the Portland Custom House would not bond Victoria goods for Kootenay. Some years ago, however, a few invoices from Victoria were taken in by the Osoyoos and Colville route through United States territory at heavy cost, as the goods had to be accompanied from Osoyoos by a Custom House Officer at the expense of the bonder. Cattle and horses from British Columbia for Kootenay (or through Kootenay to the Canadian North-West Territory) are permitted now to be sent by the same route on the same condition, which entails a charge of $5 a day for the officer. A few weeks ago the Northern Pacific Railway was made a bonded route by the United States Government, and Victoria or New Westminster goods destined for Kootenay probably could now be sent by that route from

Portland to Sand Point station, but the unbonded route thence through United States territory into Kootenay will be an obstacle still, unless the United States Secretary of the Treasury agrees to regulations on the subject to facilitate through trade in bond.

The goods from the United States have been brought into Kootenay by pack routes. Kootenay has not yet reached the humble level of a bull-team country. One pack route is from Missoula, Montana, through Tobacco Plains, and northerly along the east side of the Kootenay River to Wild Horse Creek, a distance of about 200 miles. The imports have consisted of flour, bacon, beans, and a few dry goods.

The other route, and the one hitherto most used, is that by which goods were brought from Walla Walla and other places by teams or trains to Sand Point (on Lake Pend d'Oreille, in Idaho), and thence 165 miles, farther, by pack-train to Joseph's Prairie, or Wild Horse Creek, as centres of distribution.

The long pack-train transport on these routes has made goods high-priced in Kootenay, and the tendency of the present Canadian Tariff has been to raise prices. This fact largely accounts for the slow progress of the district. Consider the prices that ironwork must reach under such circumstances. Flour, now, is $22 a barrel at the Upper Columbia lakes.

Several things already have tended and will tend to cheapen goods in Kootenay, namely, the propinquity of the Northern Pacific and the construction through the district of the Canadian Pacific Railway.

The Northern Pacific Railway now comes to Sand Point. There still is, however, the long pack thence of 165 miles to Wild Horse Creek, or 210 miles to the Upper Columbia lakes. Kootenay Lake district is more conveniently placed. Sand Point is much nearer the Kootenay Lake district. The Northern Pacific Railway accordingly will especially benefit that district, if silver mining succeeds there, as a 37-mile waggon road from Sand Point, now about to be made, will strike the Kootenay River within 100 miles of Kootenay Lake, all of it first-rate navigation. Missoula, as a place of supply for Kootenay, is diminished in importance by the construction of the Northern Pacific Railway, as Kootenay traders can reach that railway considerably west of Missoula, say about Horse Plains, and, if they like, can get goods brought thither from the west along the railway, and can take them thence by their pack-trains instead of going to more distant Missoula.

The Missoula trail naturally, is a better pack route than the Sand Point, Bonner's Ferry, and Mooyie River trail. The feed on the latter is not good. But the Missoula trail at present is unimproved, and may be regarded as a low-water, or short season, trail. Were it improved, especially on the American side, it would probably be preferred to the Mooyie River trail.

But an event is imminent that will lessen the importance of both these trails and change the direction of the trade of Kootenay—I refer to the opening of the Canadian Pacific Railway, which now touches, or almost touches, Kootenay, and in a year or two will cross, twice, its chief water-way. The effect of the opening of this railway will be that the trade of Kootenay will be largely with Eastern Canada. Upper Columbia Lake men are getting some goods this year by pack-train from Calgary, 120 miles east of the summit of the Rocky Mountains. Next spring, first-quality Minnesota or Manitoba flour will be delivered at Kicking Horse Pass for $13.50 a barrel. It hardly can be doubted that, in the future, Canadian goods from the east, and also, despite the Tariff, some American goods from the east, will be deposited at Kicking Horse Pass, and thence, or from some convenient centre depending on that station, will be distributed to supply those employed within Kootenay on railway construction work, and, permanently, the future mining population, for some distance north of Kicking Horse Pass, and, probably, the population of most part of the long eastern valley of Kootenay to the southward.

Nor is it improbable that, in the future, another portion of Canadian, and also American goods, from the east will be deposited at, and distributed from some place in the neighbourhood of Eagle Pass, to meet, for the time, the wants of those employed in making the railway, and, permanently of any miners in Big Bend to the north, who, owing to defective navigation (see "navigableness of the Columbia"), cannot be so well supplied from Kicking Horse Pass, and to supply any timbering or other settlements on the Columbia River between Eagle Pass and the boundary. There will be large saw-mills in the neighbourhood of Eagle Pass, and there may be saw-mills lower down the Columbia. Certainly there will be logging camps lower down the Columbia.

Canadian or American goods for the supply of Kootenay perhaps will not come from the east to any distributing centre, west of the above two Columbia crossings (Kicking Horse and Eagle Pass), as, in order to supply Kootenay, they would have to be sent back eastward for

some distance by train. Except in some lines of sea-borne goods I do not think that our seaboard cities can get much of the Kootenay trade of the future. An effort may be made to secure a portion of it, say the trade of the western leg of the Columbia, by the Eagle Pass, Shuswap, or Thompson River railway town, where will be centred the bulk of the trade of the interior of the province—the town itself mainly supplied from the east by railway. In similar cases elsewhere, it has been found that towns or villages already established, not too far off and having a local trade of their own, may compete successfully with new rivals that have some advantage in cheapness of transport from centres of supply. A town somewhere between Spallumcheen and Savona's Ferry may prevent the growth of an Eagle Pass centre of distribution. Much will depend on the traffic arrangements of the railway, and on the enterprise and foresight of men who may be interested, as well as skilful, in collecting lines of business at a suitable place.

In the above, the Kootenay Lake secluded region has not been mentioned. This region, as I have said, is something like a pocket, or it may be likened to a horseshoe with the open part to the south. A fine, long navigable stream—the Kootenay River—meanders from the lake through that open, and flows into Idaho, within, as already stated, about 30 miles of the Northern Pacific Railway. This is the only natural inlet and outlet of the Kootenay Lake region, and its infant trade goes that way. A mining region, if ever anything, American-made mining machinery will be in demand irrespectively of price. It is doubtful if much of the future trade of that region can be taken, even with the help of tariffs, from the Kootenay water-way, supplemented as the navigable facilities would be, if traffic grew, by a 30-mile railway feeder to the Northern Pacific Railway. The only possible way in which the trade of that region can be got at by Canada, is by the proposed "Kootenay Bill" railway which breaks through one of the rough sides of the horseshoe. With that, an attempt might be made by Canada to secure the trade, if there ever will be any trade. Without that, not even an attempt could be made. So simple a matter needs not a further word. Nature has shut all argument by mountain walls which encircle the whole region except across the southerly opening in United States territory, and except across the westerly narrow, rugged cut in our own territory from Kootenay Lake to the Columbia River, which cut is the channel of an unnavigable stream and the line of the proposed railway.

The other important water-way, for possible United States traffic, is, as above-mentioned, the Columbia itself. This is more obstructed than the Kootenay water stretch above described. It is open at the boundary and for 17 miles southerly beyond it. The Little Dalles (American) there occur which steamboats cannot pass except at low stages of water. The portage is about a mile, on ground suitable for a railway. A waggon road from the south leads to the Little Dalles. About 27 miles below the Little Dalles, and of course also in United States territory, the impassable Kettle falls occur. In the event of a large traffic on the British side, these obstructions to traffic with the United States by the Columbia River could be overcome by portage links. Spokane Falls City, the nearest station of the Northern Pacific Railway, is about 130 miles distant by waggon road from the boundary where the Columbia crosses it, and it is about 100 miles from White's Landing (Boundary Commission old barracks), to the neighbourhood of which latter a railway feeder of the North Pacific, constructed to tap the Colville District, might by and by come, though no survey of such a line has been made.

The western leg of the Columbia, in British territory, is therefore not so well circumstanced either as regards water or land for United States traffic on the Northern Pacific Railway, as is the secluded horseshoe district of Kootenay Lake up the Kootenay River to Bonner's Ferry and through Pack River Pass to the Sand Point station.

These two portions of Kootenay District—what I have called the "western leg region of the Columbia" and the secluded Kootenay Lake region—are, it must be understood, shut off naturally the one from the other, and each has its water-way stretching southerly; the western leg has the Columbia for its water-way; the Kootenay Lake region has the Kootenay. This orographical fact does not appear to have been appreciated in discussions last year on Kootenay matters. Between the two above-named regions, forming part of Kootenay District, all ordinary traffic is impossible owing to the existence of a wall of mountains and hills. The shortest and the only direct cut through that wall is the bed of the lower course of the Kootenay River which flows from the head of the western arm of Kootenay Lake into the Columbia River. This portion of the Kootenay River, as above said, is useless for general navigation owing to falls and rapids. The proposed Kootenay Railway, of which so much has been said, runs along that unnavigable river, connecting for any purposes it may serve, two regions which nature has practically separated.

There is one purpose which that proposed railway will serve, which probably is the one most looked to by its promoters. It is difficult to say at present whether the Kootenay River and Sand Point route from Kootenay Lake, or the proposed railway and Columbia River route to Eagle Pass will be found best for transporting the lead which it will be necessary to export from the Kootenay Lake galena mines to make them pay. Probably, so far as I can see at present, the Sand Point route will be preferable when the North Pacific Railway make, as soon would be made, a short line from Sand Point to Bonner's Ferry on Kootenay River.

What seems more clear is that by means of the railway between Kootenay Lake and the Columbia River, American goods, which always will be largely in demand, can in future be conveyed into the heart of British Columbia (whence also a considerable part of Alberta can be supplied), by a route with which no other can compete, as it is a route with slightly interrupted water communication the whole way.

If the Northern Pacific Railway make a short line from Sand Point station or its neighbourhood to the Lower Kootenay River, and Mr. Ainsworth makes his short railway between Kootenay Lake and the Columbia, American goods brought to Sand Point on the North Pacific can be laid down at Eagle Pass more cheaply than they could be sent thither by the trunk Canadian Pacific line either viâ Winnipeg or Port Moody.

By reducing the cost of commodities to the consumer, this will benefit the province, but it completely turns the flank of the Canadian Government in the position they took up that the trunk line of the Canadian Pacific was not to be tapped. It is singular also that any seaboard commercial city should have approved an arrangement which diminishes its already small chance of securing the trade in or the handling of some lines of American goods to supply the interior of British Columbia or portion of Kootenay District.

I am speaking above of American goods. Canadian goods for probably much of the interior of British Columbia will come by the Canadian Pacific Railway.

The bulk of the imports for the western leg of the Columbia region at least, as well as for Kootenay Lake region, will be brought by the Canadian Pacific Railway and distributed, probably from Eagle Pass. The United States Colville region is not a region whence much can be brought north to us, except perhaps intermittent supplies of hay, flour, and bacon, which Yale District may not be able to supply, or may not see a profit in supplying to the Columbia. An agricultural and grazing country into which settlers are coming, the surplus produce of the Colville region is for many years likely to be small. I do not know but that Canadian manufacturers and the Canadian Pacific Railway might push the commercial war home and use the great Columbia water-way to supply the Colville region, at least while it is connected with the Northern Pacific trunk line only by long waggon roads.

SOME NOTES ON THE QUESTION OF U. S. DUTIES, ON POSSIBLE KOOTENAY LAKE REGION MINERALS, AND ON A BONDED ROUTE TO SAND POINT, WITH A LETTER FROM THE AMERICAN SECRETARY OF THE TREASURY ON THE LATTER SUBJECT.

I may mention here, as the subject has been much discussed in the province in connection with Kootenay matters, that in the United States Tariff, gold and silver bullion and silver ore are free. Lead is subject to the following duties:—

Lead in pigs and bars, molten and old refuse lead run into blocks and bars and old scrap lead fit only to be remanufactured	2 cts. ℔ lb
" in sheets, pipes, or shot	3 " "
" acetate of, brown	4 " "
" " white	6 " "
" antimonial, as type metal	20 per cent.
" ashes in which the lead is of trifling value, as unmanufactured article not specified	10 " "
The same containing a large percentage of lead as lead ore	1½ cts. ℔ lb
" Black, as Plumbago	Free.
" chromate of, as a colour	25 per cent.
" dross	1½ cts. ℔ lb
" nitrate of	3 " "
" ore	1½ " "
" red	3 " "
" all articles made of lead not otherwise specified	45 per cent.

Any ore containing more than two per cent. of copper shall pay in addition thereto 2½ ct. per lb. on the copper contained therein.

The duties on minerals in general are as follow. I quote from a late edition of the Tariff, which took effect 1st July, 1883. The editor remarks that the provisions seem to conflict, and his remark is correct, but, as far as I know, no case has arisen to require an official or legal interpretation of the meaning of these apparently conflicting provisions:—

Mineral substances in a crude state and metals unwrought; not otherwise specified	20 per cent.
Minerals, crude, not advanced in value or condition or by other process of manufacture; not otherwise specified	Free.
Minerals, all non-dutiable crude minerals but which have been advanced in value or condition by refining or grinding, or by other process of manufacture; not otherwise specified	10 per cent.

But the effect of duties on Kootenay Lake products shipped into the United States for consumption or use there, is only part of the question as to the availableness of the Kootenay waterway route for future traffic. It may be desired to ship these products in bond, through the United States, for exportation to foreign countries. The remarks which I already have made on the bonding question, at the beginning of this chapter on "Trade," are applicable here.

The Northern Pacific Railway Company and the Oregon Railway and Navigation Company have been accepted by the United States Government as common carriers by rail and vessel, of appraised and Canada transit merchandise; in other words, what is popularly called the "Northern Pacific route" is now a bonded route from the East right through to Portland, Oregon. This bonded route, of course, can only be struck from Canada at designated places, as neither the United States nor Canada can make Custom House Bonding arrangements along their whole frontier. The Customs Acts of the United States authorize the Secretary of the Treasury to designate places and to make regulations in harmony with the intent of Treaties between the United States and Great Britain.

What then will be necessary to make the Kootenay water-way available for Canadian transit goods in bond for exportation, say from Portland, Oregon, or any other western seaport, is a regulation on the part of the United States Treasury Department to cover the unbonded route of 60 miles navigation up the Kootenay, and 30 odd miles thence by land to strike the bonded route of the Northern Pacific Railway at Sand Point. If the Northern Pacific made a railway feeder from Sand Point to the Kootenay River, and had a steamboat down that river, the extension would be part of their bonded route without further Treasury regulation. Until that were done, the regulation probably would take the form of requiring the presence of a United States Custom House Officer with the goods from the boundary to Sand Point, at the expense of the bonder. The question then would be whether that expense, and the formalities and inconveniences attendant upon the exportation in bond from the United States seaport, would counterbalance the natural advantages of the Kootenay water-way route, and throw the traffic across to the Columbia by the proposed "Kootenay Bill" railway and up to the Canadian Pacific Railway at Eagle Pass.

For more authoritative information as to the above question of a bonded route from our boundary to Sand Point, I addressed a letter to the Honourable the Secretary of the Treasury, Washington, and annex his reply, 9th January, 1884:—

"TREASURY DEPARTMENT, OFFICE OF THE SECRETARY,
"WASHINGTON, D. C., January 9th, 1884.

"*Collector of Customs,*
"*Portland, Oregon.*

"SIR,—This department is in receipt of your letter, dated the 22nd ultimo, transmitting a communication from the Honourable G. M. Sproat, Commissioner of the Province of British Columbia, relative to the transit through the United States, for export, of lead or silver ore from the Kootenay country, and stating that the ore is to be transported by the Northern Pacific Railway to Portland, and thence exported to foreign countries.

"It appears from your report that there is a body of mineral ore about to be developed in the Kootenay Country, the product of which would naturally find exit viâ the Northern Pacific Railroad.

"As the case now stands, it is not deemed necessary to give you any special instructions in regard to the matter.

"If it should appear at any time that merchandise is to be shipped to your port, viâ Sand Point, in large quantities, the Department will give further consideration to the subject.

"The statements before the Department upon the subject do not show that the trade at present would warrant the establishment of a Customs Station at Sand Point.

"Very respectfully,
(Signed) "H. F. FRENCH,
"*Assistant Secretary.*"

A correspondent in San Francisco, who at my request made enquiries as to export warehousing, writes to me as follows:—

"Ore containing lead, silver, copper, or gold can be shipped in transit through the United "States, like any other merchandise, under bond, that is, a bond would have to be given at "port of shipment to the Custom House authorities, that the ores would not be used in the "United States, and such bond would require to be revoked at the port of exportation. Ore "can remain in bond for one year, after which time an additional 10 per cent. is charged on "the duty, if the ore is used in the United States, but, if exported, it may remain in bond for "two years, without incurring any extra cost."

GILBERT MALCOLM SPROAT.

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